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A study on knowledge of control measure practices of parthenium (*Parthenium hysterophorus* L.) weed among the farmers of Surguja district of Chhattisgarh state

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Abstract
A study on knowledge of control measur practices of parthenium (*parthenium hysterophorus* l.) weed among the farmers of Surguja district of Chhattisgarh. The problems faced by the farmer during knowledge of control measure practices of Parthenium weed are concerned it was found that the respondents had medium level of knowledge regarding knowledge about Parthenium weed, 87.5 per cent, 71.87 per cent, 60.93 per cent, 78.90 per cent, 100 per cent, 98.43 per cent, 93.75 per cent, 99.21 per cent of the respondents had low level of knowledge regarding control measure practices of Parthenium weed, respectively, whereas the respondents 8.59 per cent scientific,19.53 per cent mechanical, 28.90 per cent uprooting, 17.96 per cent cultural, and utilization, 1.56 per cent in other and 3.12 per cent chemical methods of the respondents had medium level of knowledge regarding of the control measure practices of Parthenium weed, and 4.68 per cent scientific, 8.59 per cent mechanical, 10.15 per cent uprooting, 3.12 per cent cultural, and chemical methods and 0.78per cent biological methods of the respondents had low level of knowledge regarding of the control measure practices of Parthenium weed.

Keywords: Knowledge of control measur practices of parthenium (*parthenium hysterophorus* l.) weed

Introduction
Parthenium has invaded 35 million hectares across the country including crop land, wasteland and forest areas, according to the DWSR, which is preparing a report on this. Initially, the deadly weed occupied largely non-crop areas like wasteland, open forests and roadsides. Now it has now spread to cropping land at an alarming rate**.** Parthenium is a poisonous, pernicious, problematic, allergic and aggressive weed posing a serious threat to human beings and livestock. This weed has been considered as one of the greatest source of dermatitis, asthama, nasal-dermal and naso-bronchial types of diseases. Besides these ill effects, it also causes several other problems like blockage of common pathways and orchards and reduces the aesthetic values of parks, gardens and residential colonies. Mostly Parthenium is a weed of fallow and waste land but its impact on agricultural crops has not been well documented. Its infestation has been noticed more in rainfed than in irrigated agriculture. The present study will provide useful guidance and knowledge for understanding the various control measure practices of Parthenium weed used by the farmers. The findings of the study would also be helpful to understand the problems faced by the farmers in adoption of control measure practices of Parthenium weed and to obtain the suggestions to overcome the problems faced by them. will serve as a guideline for research and extension workers to work in line of farmer's perspective for improving the production and productivity by prescribing precise control measures for controlling the Parthenium weed, The study will also be helpful to the planners, administrators and those who are directly or indirectly associated with crop production. Hence, an effort was made by planning a special study by which the extent of adoption of control measure practices of Parthenium weed was assessed in Surguja district of Chhattisgarh.

Research Methodology
The study was conducted in Surguja district of Chhattisgarh state during the year 2012-2013. Out of total seven blocks in Surguja district namely, Ambikapur, Batouli, Sitapur, Mainpat,

Udaipur, Lakhanpur and Lundra. Only two blocks namely Udaipur and Sitapur were selected purposively for this study. Out of the total villages of Sitapur and Udaipur blocks, eight villages from each block were selected randomly. The details about list of villages for the study are as follows: From Sitapur block, Sontarai, Sur, Devgarh, Aamatoli, Kenapara, Bhusu, Jobatikra, and Adarsh Nagar, and from Udaipur block, Jhirmiti, Bisunpur, Pandripani, Dadgaw, Dava, Namna, Pandridad, and Bhandarpara. For this study 8 farmers from each village were selected randomly, the total 64 farmers from each block were selected. Thus the total 128 farmers from two blocks were selected randomly for the study. The data were collected by personal interview method by contacting the respondents (farmers) at their home.

Results and Discussion

Table 1: Distribution of respondents according to their level of knowledge regarding control measure practices of Parthemium weed. (n=128)

S.N.	Practices	Level of knowledge		
		Low f/percent	Medium f/percent	High f/percent
1	Knowledge about Parthenium weed	22 (17.18)	78 (60.95)	28 (21.87)
2	Distribution on field	75 (58.59)	34 (26.56)	19 (14.85)
3	Total spread area	43 (33.59)	65 (50.78)	20 (15.63)
4	Other name	96 (75.00)	14 (10.94)	18 (14.06)
5	Propagation	52 (40.63)	64 (50.00)	12 (9.37)
6	Life cycle	61 (47.65)	42 (32.81)	25 (19.54)
7	Seed production	63 (49.22)	40 (31.25)	25 (19.53)
8	Identification of seed	75 (58.59)	34 (26.56)	19 (14.85)
9	Type and condition of soil for seed germination	63 (49.23)	45 (35.15)	20 (15.62)
10	Reason of Parthenium weed distribution.	87 (67.96)	26 (20.33)	15 (11.71)
11	Harmful effect	75 (58.59)	37 (28.90)	16 (12.51)
12	Harmful effects on human health	109 (85.15)	11 (8.59)	8 (6.26)
13	Identification of skin allergy through patch test	121 (94.54)	7 (5.46)	0 (0.00)
14	Harmful effects on animals	125 (97.66)	2 (1.56)	1 (0.78)
15	Hair loss of animals due to consumption of Parthenium weed	128 (100)	0 (0.00)	0 (0.00)
16	Diarrhoea causes by consumption of Parthenium weed in animals	122 (95.32)	4 (3.12)	2 (1.56)
17	Skin allergy causes by consumption of Parthenium weed in animals	124 (96.87)	3 (2.35)	1 (0.78)
18	Effects on agriculture	93 (72.65)	25 (19.53)	10 (7.82)
19	Effects on crop production area and production	78 (60.93)	38 (29.68)	12 (9.38)
20	Effects on seed germination and growth of other crops	78 (60.95)	39 (30.46)	11 (8.59)
21	More effects on different crops	75 (58.59)	35 (27.35)	18 (14.06)
22	Effects on soil condition	84 (65.62)	31 (24.23)	13 (10.15)
23	Presence of lot of hidden disease.	107 (83.59)	11 (8.59)	10 (7.82)
24	Scientific methods of Parthenium weed control	112 (87.50)	10 (7.82)	6 (4.68)
25	Mechanical method	92 (71.87)	25 (19.54)	11 (8.59)
26	Uprooting method	78 (60.94)	37 (28.91)	13 (10.15)
27	Precaution during uprooting method	101 (78.90)	19 (14.85)	8 (6.25)
28	Cultural method	101 (78.91)	23 (17.97)	4 (3.12)
29	Advantages of cultural method	111 (86.72)	12 (9.37)	5 (3.91)
30	Legal method	128 (100)	0 (0.00)	0 (0.00)
31	Utilization method	126 (98.44)	2 (1.56)	0 (0.00)
32	Use of Parthenium weed as insecticidal and nematicidal form	127 (99.22)	1 (0.78)	0 (0.00)
33	For making acid and biogas	127 (99.22)	1 (0.78)	0 (0.00)
34	For making card board	128 (100)	0 (0.00)	0 (0.00)
35	Use of Parthenium weed on sericulture	128 (100)	0 (0.00)	0 (0.00)
36	For making compost	128 (100)	0 (0.00)	0 (0.00)
37	Use of Parthenium weed which stage on composting	128 (100)	0 (0.00)	0 (0.00)
38	Nutrient status of Parthenium weed compost	128 (100)	0 (0.00)	0 (0.00)
39	Chemical method	120 (93.76)	4 (3.12)	4 (3.12)
40	Chemical quantity	126 (98.44)	0 (0.00)	2 (1.56)
41	When chemical method is applied according to day and time- interval	123 (96.09)	2 (1.56)	3 (2.35)
42	Precaution during chemical method	123 (96.09)	1 (0.78)	4 (3.13)
43	Salt solution method	127 (99.22)	0 (0.00)	1 (0.78)
44	Biological methods	127 (99.22)	0 (0.00)	1 (0.78)
45	Fungal method	127 (99.22)	0 (0.00)	1 (0.78)
46	Bacterial method	128 (100)	0 (0.00)	0 (0.00)
47	Insect method	127 (99.22)	0 (0.00)	1 (0.78)
48	Cultural method	127 (99.22)	1 (0.78)	0 (0.00)
49	Flowers method	128 (100)	0 (0.00)	0 (0.00)
50	Other methods	128 (100)	0 (0.00)	0 (0.00)
51	Surrounding area covered under Parthenium weed	42 (32.82)	51 (39.84)	35 (27.34)
52	Field area which is effected by Parthenium weed	71 (55.46)	35 (27.35)	22 (17.19)
53	Yield loss due to Parthenium weed	88 (68.76)	20 (15.62)	20 (15.62)

The data represented in Table1. Indicated that majority of the respondents (60.95%) had medium level of knowledge about Parthenium weed, followed by 21.87 per cent respondents were having high level of knowledge about Parthenium weed,

whereas 17.18 per cent respondents had low knowledge about Parthenium weed.

It was found that majority of the respondents (58.59%) had low level of knowledge about distribution on field, whereas, 26.56 and 14.85 per cent of the respondents were having medium and high level of knowledge, respectively knowledge about distribution on field.

It was observed that majority of the respondents (50.78%) had medium level of knowledge about total spread area 33.59 and 15.63 per cent of the respondents were having low and high level of knowledge, respectively knowledge about total spread area.

It was found that majority of the respondents (75.00%) had low level of knowledge about other name, whereas, 14.06 and 10.94 per cent of the respondents were having high and medium level of knowledge, respectively regarding knowledge about other name.

It was observed that majority of the respondents (50.00%) had medium level of knowledge about propagation, whereas, 40.63 and 9.37 per cent of the respondents were having low and high level of knowledge, respectively regarding knowledge about propagation.

It was observed that majority of the respondents (47.65%) ha d low level of knowledge about life cycle, 32.81and 19.54 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about life cycle.

It was found that maximum number of the respondents (49.22%) had low level of knowledge about seed production, whereas, 31.25 and 19.53 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about seed production.

It was found that majority of the respondents (58.59%) had low level of knowledge about identification of seed, whereas, 26.56 and 14.85 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about identification of seed.

It was found that majority of the respondents (49.23%) had low level of knowledge about type and condition of soil for seed germination, whereas, 35.15 and 15.62 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about type and condition of soil for seed germination.

It was observed that majority of the respondents (67.96%) had low level of knowledge about reason of Parthenium weed distribution, 20.33 and 11.71 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about reason of Parthenium weed distribution.

It was found that majority of the respondents (58.59%) had low level of knowledge regarding knowledge about harmful effect, whereas, 28.90 and 12.51 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about harmful effect.

It was observed that majority of the respondents (85.15%) had low level of knowledge regarding knowledge about harmful effects on human health, 8.59 and 6.26 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about harmful effects on human health.

It was found that majority of the respondents (94.54%) had low level of knowledge regarding knowledge about identification of skin allergy through patch test, followed by 5.46per cent respondents who were having medium knowledge regarding knowledge about identification of skin allergy through patch test, whereas none of the respondents were having high level of knowledge regarding knowledge about identification of skin allergy through patch test.

It was observed that majority of the respondents (97.66%) had low level of knowledge regarding knowledge about harmful effect on animals, 1.56 and 0.78 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about harmful effect on animals.

It was observed that majority of the respondents (100%) had low level of knowledge regarding knowledge about hair loss of animals due to consumption of Parthenium weed, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about hair loss of animals due to consumption of Parthenium weed.

It was found that maximum number of the respondents (95.32%) had low level of knowledge regarding knowledge about problem of diarrhoea causes by consumption of Parthenium weed in animals, whereas, 2.34 and 1.56 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about diarrhoea causes by consumption of Parthenium weed in animals.

It was found that majority of the respondents (96.87%) had low level of knowledge regarding knowledge about skin allergy causes by consumption of Parthenium weed in animals, whereas, 2.35 and 0.78 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about skin allergy causes by consumption of Parthenium weed in animals.

It was found that majority of the respondents (72.65%) had low level of knowledge regarding knowledge about effects on agriculture, whereas, 19.53 and 7.82 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about effects on agriculture,

It was observed that majority of the respondents (60.93%) had low level of knowledge regarding knowledge about effects on crop production area and production, 29.68 and 9.38 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about effects on crop production area and production.

It was found that majority of the respondents (60.95%) had low level of knowledge regarding knowledge about effects on seed germination and growth of other crops, whereas, 30.46 and 8.59 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about effects on seed germination and growth of other crops.

It was found that majority of the respondents (58.59%) had low level of knowledge regarding knowledge about more effects on different crops, whereas, 27.35 and14.06 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about more effects on different crops.

It was observed that majority of the respondents (65.62%) had low level of knowledge regarding knowledge about effects on soil condition, 24.21and 10.15 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about effects on soil condition.

It was observed that majority of the respondents (83.59%) had low level of knowledge regarding presence of lot of hidden disease, 8.59 and 7.82 per cent of the respondents were having medium and high level of knowledge, respectively regarding presence of lot of hidden disease.

It was found that maximum number of the respondents (87.50%) had low level of knowledge regarding knowledge about scientific methods of Parthenium weed control, whereas, 7.82 and 4.68 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about scientific methods of Parthenium weed control.

It was found that majority of the respondents (71.87%) had low level of knowledge regarding knowledge about mechanical method, whereas, 19.54 and 8.59 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about mechanical method.

It was found that majority of the respondents (60.94%) had low level of knowledge regarding knowledge about uprooting method, whereas, 28.91 and 10.15 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about uprooting method.

It was found that majority of the respondents (78.90%) had low level of knowledge regarding knowledge about precaution during uprooting method, whereas, 14.85 and 6.25 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about precaution during uprooting method.

It was observed that majority of the respondents (78.91%) had low level of knowledge regarding knowledge about cultural method, 17.97 and 3.12 percent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about cultural method.

It was found that majority of the respondents (86.72%) had low level of knowledge regarding knowledge about advantages of cultural method, 9.37 and 3.91 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about advantages of cultural method.

It was found that majority of the respondents (100%) had low level of knowledge regarding knowledge about legal method, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about legal method.

It was found that majority of the respondents (98.44%) had low level of knowledge regarding knowledge about utilization method, followed by 1.56per cent respondents who were having medium knowledge regarding knowledge about utilization method, whereas none of the respondents were having high level of knowledge regarding knowledge about utilization method.

It was found that majority of the respondents (99.22%) had low level of knowledge regarding knowledge about use of Parthenium weed on insecticidal and nematicidal form., followed by 0.78per cent respondents who were having medium knowledge regarding knowledge about use of Parthenium weed on insecticidal and nematicidal form, whereas none of the respondents were having high level of knowledge regarding knowledge about use of Parthenium weed on insecticidal and nematicidal form.

It was found that majority of the respondents (99.22%) had low level of knowledge regarding knowledge about for making acid and biogas form, followed by 0.78per cent respondents who were having medium knowledge regarding knowledge about for making acid and biogas form, whereas none of the respondents were having high level of knowledge regarding knowledge about for making acid and biogas form.

It was found that majority of the respondents (100%) had low level of knowledge regarding knowledge about for making card board, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about for making card board. It was found that majority of the respondents (100%) had low level of knowledge regarding knowledge about use of Parthenium weed on sericulture, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about use of Parthenium weed on sericulture.

It was found that majority of the respondents (100%) had low level of knowledge regarding knowledge about for making compost, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about for making compost.

It was found that majority of the respondents (100%) had low level of knowledge regarding knowledge about use of Parthenium weed which stage on composting, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about use of Parthenium weed which stage on composting.

It was found that majority of the respondents (100%) had low level of knowledge regarding knowledge about nutrient status of Parthenium weed compost, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about nutrient status of Parthenium weed compost.

It was found that majority of the respondents (93.75%) had low level of knowledge regarding knowledge about chemical method, whereas, 3.13 of the respondents were having medium and high level of knowledge, respectively regarding knowledge about chemical method.

It was found that majority of the respondents (98.44%) had low level of knowledge regarding knowledge about chemical quantity, followed by 1.56per cent respondents who were having high knowledge regarding knowledge about chemical quantity, whereas none of the respondents were having medium level of knowledge about chemical quantity.

It was found that maximum number of the respondents (96.09%) had low level of knowledge regarding knowledge about when chemical method is applied according to day and time- interval, whereas, 2.35 and 1.56 per cent of the respondents were having high and medium level of knowledge, respectively regarding knowledge about when chemical method is applied according to day and time-interval.

It was observed that majority of the respondents (96.09%) had low level of knowledge regarding knowledge about precaution during chemical method, whereas, 3.13 and 0.78 per cent of the respondents were having high and medium level of knowledge, respectively regarding knowledge about Precaution during chemical method.

It was found that majority of the respondents (99.22%) had low level of knowledge regarding knowledge about salt solution method, followed by 0.78per cent respondents who were having high knowledge regarding knowledge about salt solution method, whereas none of the respondents were having medium level of knowledge about salt solution method.

It was observed that majority of the respondents (99.22%) had low level of knowledge regarding knowledge about biological method, followed by 0.78per cent respondents who were having high knowledge regarding knowledge about biological method, whereas none of the respondents were having medium level of knowledge about biological method.

It was found that majority of the respondents (99.22%) had low level of knowledge regarding knowledge about fungal method, followed by 0.78per cent respondents who were having high knowledge regarding knowledge about fungal method, whereas none of the respondents were having medium level of knowledge about fungal method.

It was found that majority of the respondents (100%) had low level of knowledge regarding knowledge about bacterial method, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about bacterial method.

It was found that majority of the respondents (99.22%) had low level of knowledge regarding knowledge about insect method, followed by 0.78per cent respondents who were having high knowledge regarding knowledge about insect method, whereas none of the respondents were having medium level of knowledge about insect method.

It was observed that majority of the respondents (99.22%) had medium low level of knowledge regarding knowledge about cultural method, followed by 0.78 per cent respondents who were having medium knowledge regarding knowledge about cultural method, whereas none of the respondents were having high level of knowledge regarding knowledge about cultural method.

It was found that majority of the respondents (100%) had low level of knowledge regarding knowledge about flowers method, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about flowers method.

It was found that maximum number of the respondents (100%) had low level of knowledge regarding knowledge about other methods, whereas, none of the respondents were having medium and high level of knowledge, respectively regarding knowledge about other methods.

It was observed that majority of the respondents (39.84%) had medium level of knowledge regarding knowledge about surrounding area covered under Parthenium weed, whereas, 32.82 and 27.34 per cent of the respondents were having low and high level of knowledge, respectively regarding knowledge about surrounding area covered under Parthenium weed.

It was found that majority of the respondents (55.46%) had low level of knowledge regarding knowledge about field area which is effected by Parthenium weed, whereas, 27.35 and 17.19 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about field area which is effected by Parthenium weed.

It was observed that majority of the respondents (68.76%) had low level of knowledge regarding knowledge about yield loss due to Parthenium weed, 15.62 per cent of the respondents were having medium and high level of knowledge, respectively regarding knowledge about yield loss due to Parthenium weed.

It can be concluded that per cent of the respondents had medium level of knowledge regarding knowledge about Parthenium weed, 87.5 per cent, 71.87 per cent, 60.93 per cent, 78.90 per cent, 100 per cent, 98.43 per cent, 93.75 per cent, 99.21 per cent of the respondents had low level of knowledge regarding control measure practices of Parthenium weed, respectively, whereas the respondents 8.59 per cent scientific,19.53 per cent mechanical, 28.90per cent uprooting, 17.96 per cent cultural, and utilization, 1.56per cent in other and 3.12 per cent chemical methods of the respondents had medium level of knowledge regarding of the control measure practices of Parthenium weed, and 4.68per cent scientific, 8.59 per cent mechanical, 10.15 per cent uprooting, 3.12 per cent cultural, and chemical methods and 0.78per cent biological methods of the respondents had low level of knowledge regarding of the control measure practices of Parthenium weed.

Conclusions

Majority of the respondents reported high cost of herbicides as the most important problem, lack of information about Parthenium weed, lack of information regarding control methods of Parthenium weed, lack of information regarding harmful effects of Parthenium weed, lack of knowledge about appropriate doses of herbicides, labours for weeding, herbicides application *etc.* and majority of the them suggested herbicides should be available at low cost at village level, free distribution of herbicides for Parthenium weed control, labour problems should be managed timely, increase knowledge in village level about harmful effects of Parthenium weed, training should be given to farmers regarding different control measure practices of Parthenium weed. There is an urgent need to improve the education and knowledge level of farmers through skill oriented training programmes, demonstrations, fieldtrips and proper technical guidance. The demonstrations on use of control measure practices of Parthenium weed may therefore be helpful in convincing of farmers. An exhibition and kisan mela should also be organized on different aspects of control measure practices of Parthenium weed by the concerned agencies at village level.

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